

Special Article

THE EFFECT OF BEDSIDE CASE PRESENTATIONS ON PATIENTS' PERCEPTIONS OF THEIR MEDICAL CARE

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**ABSTRACT**

**Background** Concern that case presentations at the bedside may make patients uncomfortable has led many residency programs to move presentations to the conference room. We performed a randomized, controlled trial of the effect of these two approaches on patients' perceptions of their care.

**Methods** The study patients were adults admitted to the general medical service of a teaching hospital. Four house-staff "firms" (each comprising teams of physicians) were randomly assigned to make their case presentations during morning rounds either at the patient's bedside or in a conference room for one week, to switch to the alternate site for a second week, and to return to the initial site for a third week. To assess patients' perceptions, a questionnaire was administered within 24 hours of admission.

**Results** During the three weeks of the study, 95 patients had bedside presentations and 87 patients had conference-room presentations. When the former were compared with the latter, the patients with bedside presentations reported that their doctors spent more time with them on morning rounds (10 vs. 6 minutes,  $P < 0.001$ ). The patients with bedside presentations were also somewhat more likely to report favorable perceptions of their inpatient care (range of adjusted odds ratios, 1.12 to 2.17), although none of the associations were statistically significant. Better-educated patients were less likely to report that physicians used confusing terminology and explained tests and medications inadequately than were patients who had not completed high school.

**Conclusions** These data suggest that from the patient's perspective, bedside case presentations are at least as good as conference-room presentations, and perhaps preferable. When physicians make presentations at the bedside of less well educated patients, they should be especially careful to avoid medical jargon and to explain fully their plans for inpatient care. (N Engl J Med 1997;336:1150-5.)

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THERE should be "no teaching without a patient for a text, and the best teaching is that taught by the patient himself."<sup>1</sup> This principle of William Osler reflects the traditional practice of using the bedside as the primary site for clinical teaching. Bedside case presentations encourage physicians to view patients as actual people rather than abstract hosts of disease. They also allow physicians to observe physical conditions that may influence their understanding of a patient's illness and provide an opportunity for students to learn the art of clinical medicine. The essential trait of empathy is perhaps best learned at the bedside through the example of a seasoned clinician.<sup>2</sup> Nevertheless, surveys of teaching practices in American medical schools indicate that relatively little time is spent at the bedside.<sup>3-5</sup> Despite the potential advantages of bedside presentations for students and physicians, there has been a trend to move clinical teaching away from the bedside and into the conference room.<sup>3</sup> Concern about patients' discomfort with bedside presentations appears to be one reason for this change.<sup>6</sup> Studies of such presentations have focused on patients' impressions and measurements of patients' anxiety.<sup>7-11</sup> Bedside and conference-room presentations have not been directly compared. We therefore performed a randomized, controlled trial to compare bedside presentations with conference-room presentations with regard to their effects on patients' perceptions and satisfaction.

**METHODS**

**Study Patients**

Patients consecutively admitted to the Osler medical service of Johns Hopkins Hospital during a three-week period were eligible for the study. There are four general medical "firms" on the service, each represented at a given time by a team consisting of one

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chief resident, two senior residents, four interns, and three students. After stratifications for sex and the medical school from which they graduated, house officers are randomly assigned to firms at the start of their internships.

Every month, approximately 100 patients are admitted under the care of each firm. The chief resident is the attending physician for 80 percent of these patients, who reside primarily in East Baltimore, an urban, predominantly black community with a population of 150,500 in 1994. Faculty members serve as the attending physicians for the remaining 20 percent of patients, who come from the greater Baltimore metropolitan area or are referred from outside the region. The average stay of patients on the service is six days.<sup>12</sup> The majority of the rooms accommodate two patients separated by a curtain; the remaining rooms are private. Non-English speakers, patients under 18 years of age, and cognitively impaired patients were excluded from the study.

### Randomization

Usually, medical students and interns on the service present new cases during morning rounds either at the bedside or in the conference room, at the discretion of the chief resident. Chief residents generally prefer bedside presentations, unless the patient is not available during rounds or has been placed in respiratory isolation. In this study, the chief residents agreed to forgo their usual preferences and have the presentations at assigned sites. Thus, the house-staff firm was the unit of randomization.

Each firm was randomly assigned to make presentations for one week either in the conference room or at the bedside. After that week, the firm changed to the alternate site — that is, firms making bedside presentations made conference-room presentations, and the reverse. The firms returned to the initial site for the third week of presentations. If the firm was assigned to make presentations at the patient's bedside but the patient either was not in the room during the morning rounds or was in respiratory isolation, the case presentation was made in the conference room. Members of the house staff were told only that an intern was conducting a study comparing bedside with conference-room case presentations.

### Interventions

#### Bedside Presentations

During a bedside presentation to the other members of the team gathered in the patient's room, the admitting intern or medical student gives the patient's history and the results of the physical examination performed on admission, with the assessment and treatment plan. A brief dialogue with the patient follows, allowing the team members to clarify the patient's chief symptom and address unanswered questions about the illness and the patient's further care. The chief resident may also examine the patient briefly, elaborate on the approach to the illness, and discuss the differential diagnosis. After this discussion, the medical team gathers outside the room to discuss more theoretical aspects of the case.

#### Conference-Room Presentations

During a conference-room presentation, the admitting intern or student gives the patient's entire history and physical examination, with the assessment and treatment plan, in the house-staff conference room. After discussing newly admitted patients in the conference room, the team makes abbreviated rounds that include a review of each patient's vital signs and a brief inquiry into the patient's condition since admission.

### Data Collection

Newly admitted patients were identified the morning after admission through a review of the log of admissions to the department of medicine kept by the medical shift coordinator. Within 24 hours of admission, a research assistant unaware of the firms'

assignments administered a structured questionnaire to assess patients' perceptions of their care and gather data on selected socio-demographic variables. After this assessment was complete, each patient was asked, "During your current hospital stay, were your history and physical examination presented and discussed by your doctors at your bedside?" Patients who answered yes were asked more questions about their bedside presentations. They were also invited to suggest changes in the conduct of the presentations, either by responding to statements printed in the questionnaire or by offering their own, unprompted suggestions. Neither the house staff nor the chief residents were aware of the content of the questionnaire. In addition, the patients' hospital charts were reviewed in order to characterize their coexisting conditions with use of the Charlson comorbidity index.<sup>13</sup>

### Statistical Analysis

The individual patient was the unit of analysis. We used contingency tables and Student's *t*-tests in the univariate analyses and linear and logistic regression in the multivariate analyses. There was no statistically significant difference in patients' perceptions between the weeks of the study or the house-staff firms. Nonetheless, to be certain that our results were not confounded by minor effects related to these factors, we included the study week and the firm as covariates in each multivariate model. We also analyzed the possible influence of race and educational level. The analyses were conducted with SAS statistical software.<sup>14</sup> All tests of significance were two-tailed.

Since we could not confirm in every instance that the case presentation had been conducted at the assigned site, we asked the patients to recall whether there had been a bedside presentation. Of 182 patients studied, 44 (24 percent) had recollections that were inconsistent with their teams' assignments. Twenty-four patients (13 percent) reported that there had not been a bedside presentation when such a presentation had been assigned, and 20 patients (11 percent) reported that there had been a bedside presentation when a conference-room presentation had been assigned. The results of an "as assigned" analysis are presented here. To determine the robustness of these findings, we conducted a second analysis in which the patients were grouped according to the type of presentation they recalled (an "as recalled" analysis), and a third analysis that was limited to the 138 patients who recalled having presentations at sites consistent with the assigned sites (a "recalled as assigned" analysis). The results of the "as recalled" and the "recalled as assigned" analyses were nearly identical to those of the "as assigned" analysis and are not presented here.

## RESULTS

### Characteristics of the Patients

A total of 210 patients were admitted to the medical service during the three weeks of the study. Of these patients, 28 were excluded from the study: 13 had cognitive impairment, 7 declined to participate, 4 were transferred to an intensive care unit before morning rounds, 2 were discharged before being interviewed, 1 left against medical advice before morning rounds, and 1 died within 24 hours after admission. Thus, 182 patients participated in the trial. Of these, 95 were under the care of teams assigned to bedside presentations and 87 were under the care of teams assigned to conference-room presentations.

Table 1 shows the base-line characteristics of the study patients according to assigned site of presentation. The patients in the two groups were similar. In each group approximately 55 percent were men, about 70 percent were black, and about 14 percent

had high-school diplomas or some education beyond high school. The mean age of both groups was about 50 years. The patients in the two groups also had similar types of health insurance. About half the patients in each group had private insurance or belonged to a health maintenance organization, and about one third had no insurance or received medical assistance. Finally, both groups had similar levels of coexisting conditions, as indicated by their scores on the Charlson comorbidity index.

#### Effects of Presentation Site

The patients who had bedside presentations reported that their physicians spent a mean ( $\pm$ SD) of  $10\pm 6$  minutes with them, about twice as much time as was reported by the patients who had conference-room presentations ( $6\pm 5$  minutes,  $P<0.001$ ). This disparity persisted in a linear regression model after simultaneous adjustment for firm and study week ( $11\pm 6$  vs.  $6\pm 5$  minutes,  $P<0.001$ ).

The effects of the presentation site on the patients' perceptions of the technical and interpersonal quality of their care are shown in Table 2. As compared with their counterparts who had conference-room presentations, the patients who had bedside presentations were somewhat more likely to report that their physicians explained their problems adequately, but the difference was not statistically significant. Otherwise, there were virtually no differences between the groups. A large majority in both groups thought that their physicians had explained their tests and medications adequately, had introduced themselves properly, and had treated them with respect. Likewise, both groups had similarly high degrees of satisfaction. About three quarters of patients in both groups thought that the morning rounds were "positive and satisfying" and did not provoke worry, and about 90 percent thought that their overall care "could not have been better." Analyses that adjusted simultaneously for firm and week showed that the patients who had bedside presentations had consistently more favorable perceptions and greater satisfaction, although none of the differences were statistically significant.

#### Perceptions of Bedside Rounds

To assess patients' perceptions of bedside presentations, we posed an additional set of questions to the 71 inpatients whose firm teams were assigned to bedside presentations and who recalled having such a presentation (Table 3). Eighty-seven percent of the patients reported that they had not been upset by the discussion at the bedside. A similarly high proportion thought that physicians should continue the practice of giving bedside presentations. Half the patients reported that the bedside presentation had helped them understand their illness. Nevertheless, these presentations did provoke some negative per-

**TABLE 1.** SELECTED BASE-LINE CHARACTERISTICS OF 182 MEDICAL INPATIENTS, ACCORDING TO THE MEDICAL TEAM'S ASSIGNED SITE OF CASE PRESENTATION.\*

CHARACTERISTIC	BEDSIDE (N=95)	CONFERENCE ROOM (N=87)
Male sex — no. (%)	54 (57)	49 (56)
Black race — no. (%)	70 (74)	61 (70)
Age — yr	50 $\pm$ 18	49 $\pm$ 18
Education $\geq$ 12 yr — no. (%)	11 (12)	15 (17)
Health insurance — no. (%)†		
Private or HMO	43 (45)	52 (60)
None or medical assistance	37 (39)	26 (30)
Medicare only	14 (15)	9 (10)
Charlson comorbidity score	2.4 $\pm$ 2.4	2.0 $\pm$ 2.0

\*Plus-minus values are means  $\pm$ SD. There were no statistically significant differences between the two groups.

†Data on health insurance were missing for one patient assigned to bedside presentation. HMO denotes health maintenance organization.

ceptions as well. Almost half the patients reported that too much confusing medical terminology had been used during the presentation, and an overwhelming majority said they thought that the primary purpose of the presentation had been to teach medical students and residents, rather than to enhance their medical care.

Thirty-three patients (46 percent) recommended specific changes in the conduct of bedside presentations. A majority of these patients thought they should have had an opportunity to say more in the discussion. Other recommendations were that all the physicians in the room should introduce themselves, that there should be fewer physicians in the room, that the physicians should be more attentive to the presentations, that the physicians should respect the patient's privacy more, that the physicians should ask the patient's permission to conduct a bedside presentation, and that the physicians should be seated during the presentations.

#### Perceptions According to Race and Education

To assess whether the patients' perceptions of the bedside presentations differed according to race and level of educational attainment, we conducted an additional set of analyses confined to the 95 patients who were assigned to bedside presentations (Table 4). In general, blacks had more favorable perceptions of these presentations than whites. When we adjusted simultaneously for age, sex, and education, blacks were less likely to indicate that the terminology was confusing or the discussion upsetting, and they were more likely to think that their physicians had provided adequate explanations and that bedside presentations

**TABLE 2.** PATIENTS' FAVORABLE PERCEPTIONS OF MORNING ROUNDS AND OVERALL CARE, ACCORDING TO WHETHER CASE PRESENTATIONS WERE MADE AT THE BEDSIDE OR IN THE CONFERENCE ROOM.

PERCEIVED QUALITY OF CARE	SITE OF PRESENTATION		ODDS RATIO (95% CONFIDENCE INTERVAL)*	
	BEDSIDE (N = 95)	CONFERENCE ROOM (N = 87)	UNADJUSTED	ADJUSTED†
	no. of patients (%)			
Technical				
Problems were explained adequately	84 (88)	71 (82)	2.22 (0.89–5.54)	1.93 (0.73–5.08)
Tests and drugs were explained adequately	83 (87)	74 (85)	1.22 (0.52–2.83)	1.32 (0.54–3.23)
Interpersonal				
Physicians introduced themselves	78 (82)	72 (83)	1.19 (0.48–2.97)	1.12 (0.48–2.94)
Physicians treated patients with respect	91 (96)	82 (94)	1.39 (0.36–5.34)	2.17 (0.89–9.09)
Overall				
Rounds were positive and satisfying	76 (80)	64 (74)	1.10 (0.48–2.52)	1.12 (0.47–2.63)
Rounds did not cause worry	84 (88)	79 (91)	0.77 (0.30–2.04)	1.23 (0.45–3.45)
Care could not have been better	83 (87)	78 (90)	0.80 (0.31–2.00)	1.25 (0.45–3.45)

\*Odds ratios are for the likelihood of a favorable perception among patients who had bedside presentations as compared with patients who had conference-room presentations. Patients who responded "don't know" were excluded from these calculations.

†Data shown were simultaneously adjusted for firm and week.

should continue. However, only one of the racial differences — concerning whether the physicians explained problems adequately — was statistically significant. There was a similar pattern of favorable responses among better-educated patients when they were compared with their less well educated counterparts. In particular, the better-educated patients were more than 40 percent less likely to say that the terminology had been confusing and almost six times as likely to say that their physicians had explained tests and medications adequately after we adjusted simultaneously for age, sex, race, study week, and firm.

## DISCUSSION

There have been inquiries into the attitudes of patients about bedside presentations, but to our knowledge such presentations have not been directly compared with presentations in the conference room. Our study suggests that when patients who have had bedside presentations are compared with patients who have had conference-room presentations, the former report more time spent with their physicians, similar perceptions of the technical and interpersonal qualities of their care, and similarly high degrees of satisfaction. Whites were somewhat less satisfied with bedside presentations than blacks, and less well educated patients were somewhat less satisfied than better-educated patients. Patients whose case presentation occurred at the bedside suggested that physicians should use less confusing medical terminology and should allow more participation by the patient.

Several potential limitations should be considered in interpreting these results. First, because the trial was carried out at a single center, the generalizability

of the results may be limited. The trial, however, involved a diverse patient population and house staff trained at a variety of medical schools. Second, the relatively small size of our sample raises the question of whether a significant difference in patients' perceptions would have been detected in a larger sample. Levels of satisfaction in the two intervention groups were almost equal, and when they differed, they generally favored bedside presentations. It is therefore unlikely that using a larger sample would have revealed any significant differences favoring case presentations in the conference room. Third, we were unable to confirm that in all cases our site assignments had been complied with accurately. Disagreement between the site assignments and the recollections of the patients raised the issue of a possible misclassification bias. Nonetheless, we conducted an "as assigned" analysis, an "as recalled" analysis, and a "recalled as assigned" analysis and found no significant differences between the results of the three analytic approaches. This consistency suggests that our findings are robust.

A fourth potential limitation is the fact that, because their performance was under scrutiny, the house officers may have made an unusual effort to conduct excellent bedside rounds. Although the house staff knew that a colleague was conducting a trial to determine patients' perceptions of rounds, they were not privy to the hypothesis used in the trial or the specific features of the questionnaire. Furthermore, conducting case presentations at the bedside was standard practice. Because they were thus accustomed, members of the house staff would probably have thought that the trial intervention was occurring during the

**TABLE 3.** COMMENTS ABOUT BEDSIDE PRESENTATIONS BY THE 71 INPATIENTS WHO RECALLED HAVING SUCH A PRESENTATION AND FOR WHOM ONE WAS ASSIGNED.

VARIABLE	No. OF PATIENTS (%)
<b>Patients' perceptions</b>	
Bedside presentation was not upsetting	62 (87)
Physicians should continue bedside presentations	58 (82)
Presentation helped patient understand the illness	36 (51)
Too much terminology was confusing	33 (46)
Teaching trainees was the main focus	67 (94)
<b>Patients' suggestions</b>	
Presentations should be changed	33 (46)
Patients should be encouraged to say more	24 (34)
All physicians should introduce themselves	10 (14)
Fewer physicians should gather at bedside	6 (8)
Physicians should be more attentive	4 (6)
Physicians should respect privacy more	3 (4)
Physicians should ask patient's permission to conduct rounds	2 (3)
Physicians should be seated	1 (1)

**TABLE 4.** ADJUSTED ASSOCIATIONS OF RACE AND EDUCATIONAL LEVEL WITH SELECTED PERCEPTIONS AMONG THE 95 PATIENTS WHOSE MEDICAL TEAMS WERE ASSIGNED TO BEDSIDE PRESENTATIONS.

PATIENT'S PERCEPTION	ODDS RATIO (95% CONFIDENCE INTERVAL)	
	RACE*	EDUCATIONAL LEVEL†
Terminology was confusing	0.73 (0.21–2.48)	0.57 (0.18–0.96)
Discussion was upsetting	0.83 (0.12–5.71)	0.84 (0.11–8.79)
Physicians explained problems adequately	7.90 (1.24–50.20)	1.97 (0.28–13.86)
Physicians explained tests and drugs adequately	3.01 (0.70–13.00)	5.82 (1.29–26.16)
Bedside rounds should continue	1.84 (0.35–9.73)	2.91 (0.53–16.12)

\*Odds ratios shown are for the likelihood that blacks, as compared with whites, would have the perception shown. Data were adjusted simultaneously for age, sex, education, week, and firm.

†Odds ratios are for the likelihood that patients who had completed high school, as compared with patients who had not completed high school, would have the perception shown. Data were adjusted simultaneously for age, sex, race, week, and firm.

conference-room presentations, not the bedside presentations. Moreover, since the study was conducted by a member of the house staff rather than an administrative authority in the department of medicine, there was no obvious incentive for the house staff to depart from their usual manner of bedside presentations.

A fifth concern is the possibility that our results may have underestimated the proportion of patients who were upset by the bedside presentation, because the majority of those who might have objected, and might have been upset, declined to participate. In fact, only one eligible patient declined, for no apparent reason. All the other patients who declined to participate were either too sick or too weak to answer the questionnaire.

Previous studies of bedside rounds have raised some questions, but the results of those studies have generally been favorable. Romano used structured interviews and clinical indicators of stress to assess the effects of bedside presentations.<sup>7</sup> In a survey of 100 medical inpatients at the Peter Bent Brigham Hospital, he found that 16 patients showed objective signs of tension, 13 were distressed at hearing their histories recited, and 7 were annoyed at having to undergo a physical examination publicly. Sixty-nine patients were present at the case discussion, and all found it reassuring. Romano concluded that, overall, bedside rounds educated and reassured patients. In a survey of 50 inpatients at Duke University Medical Center, Linfors and Neelon found that 66 percent thought they understood their illness better as a result of bedside presentations.<sup>8</sup> The effect of bedside rounds on 20 patients with suspected myocardial infarction was studied by Simons et al., who assessed stress by measuring blood pressure, pulse, and plasma norepinephrine.<sup>9</sup> These investigators assessed anxiety using the State-Trait Anxiety Inventory. They found that a small but significant increase in systolic and diastolic blood pressure was associated with bedside presentations, but the level of subjective anxiety was low. Kaufman et al. used a structured interview to assess the emotional effect of medical and surgical rounds.<sup>10</sup> Although rounds on medical wards were generally well tolerated, patients were annoyed by the jargon physicians used. Surgical rounds provoked more anxiety, however, because junior members of the house staff were criticized in front of patients.

Our findings confirmed our suspicion that less well educated patients would be less satisfied with bedside presentations. This dissatisfaction appears to be explained, at least in part, by a discomfort with complex medical terminology. In contrast, we were surprised to find that black patients were more satisfied with bedside presentations than their white counterparts. We had hypothesized that racial and socioeconomic differences between the majority of the house staff and their black patients might promote dissatisfac-

tion, especially since some blacks in East Baltimore had expressed mixed feelings about receiving care from trainees at a formerly segregated, research-oriented hospital.<sup>15,16</sup> One possible explanation is that despite these mixed feelings, the black patients were simply more accustomed to receiving care from young physicians in a teaching environment.

The principal implication of our study is that from the patient's perspective, bedside rounds are as good as rounds in a conference room, if not better. Bedside presentations also provide a unique opportunity for students to learn from both patients and experienced clinicians. According to many, the bedside is the ideal place to teach the art and science of clinical examination. If interns and residents are taught to encourage patient participation and avoid confusing terminology, both patients and physicians in training may benefit from presentations at the bedside.

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